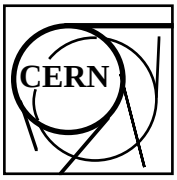

EUROPEAN LABORATORY FOR PARTICLES PHYSICS

CERN/SPSLC 95-7
SPSLC 22
3 February 1995

SPS AND LEAR EXPERIMENTS COMMITTEE

Decisions taken at the 22nd meeting on 24-25 January 1995

OPEN SESSION

1. *Lifetime measurements of $\pi^+\pi^-$ atoms to test low energy QCD predictions* (SPSLC 95-1/P284) - : L. Nemenov.

2. Status report on BEATRICE (WA92) - : L. Rossi.

3. Status report on NA48 - : M. Calvetti.

4. *Capture, electron-cooling, and compression of antiprotons in a large Penning trap and physics experiments with an ultra-low energy extracted antiproton beam* (SPSLC 95-2/P285) - : M. Holzscheiter.

CLOSED SESSION

Present: G. Barr*, F. Bourgeois, F. Close, B. D'Almagne (Chairman), M. Doser, D. Drijard (Secretary), K. Ellis, N. Ellis, L. Fayard*, A. Ferrer, L. Foà, J. Fry, B. Gavela, G. Goggi, P. Grafström, K. Green, J.-F. Grivaz, D. Jacobs, K. Jakobs*, K. Kissler, K. Königsmann, R. Landua, J. Nassalski, K. Peach*, K. Peters, L. Ristori, J.-P. Riunaud, A. Schopper, D. Simon, J. Tuominiemi, G. Wilquet.

* part-time

Apologies: J. Engelen, K. Hübner, P.-G. Innocenti, G. Løvhøiden, H. Satz.

1. Introduction:

The Chairman thanked the members who had reached the end of their term for their contributions : J. Engelen, N. Ellis, L. Fayard and G. Løvhøiden. He then welcomed the new members: K. Jakobs, R. Landua, L. Ristori and G. Wilquet.

The changes in *ex-officio* membership were the following:

G. Goggi replacing J. Allaby as PPE Division Leader.

F. Bourgeois representing M. Turala who is replacing P.-G. Innocenti as ECP Division Leader.

A. Schopper replacing G. Barr as SPS Co-ordinator.

K. Ellis as an observer during his detachment from Fermilab to CERN.

The Director of Research recalled the positive decision taken by the Council about the LHC, opening new perspectives for CERN over the next 20 years though the associated difficult financial conditions will certainly have an impact on the Laboratory.

2. Minutes of the 21st meeting:

The minutes were approved after the following modifications:

A. Schopper had been omitted from those present.

In the discussion of the open session, paragraph 7, the extension of the experiment CPLEAR (**PS195**) was accepted directly by the Committee. Therefore, the sentence which starts at line 11 of this paragraph ("In the conclusion of its status report CPLEAR (**PS195**) had requested an extension of 100 days in 1995; the Committee decided to **recommend** this extension for approval to the Research Board.") should be replaced by:

"In the conclusion of its status report CPLEAR (**PS195**) had requested an extension of 100 days in 1995; the Committee **approved** this extension and took note of the need for running time in 1996 to study the systematic effects related to the kaon regeneration."

3. Report on the last meeting of the Research Board:

The recommendations of the Committee had been endorsed by the Research Board:

- Proposal **P282**, an experiment to be performed at LEAR on antiprotonic X-rays, was approved under the code **PS209**
- The two-year extension of the ν-run requested by CHORUS (**WA95**) beyond 1995 was approved.

4. Status report on the SPS:

The ν target had been visually inspected at the end of the run to check if it had suffered from high rates. It was estimated, from the machine point of view, that the target can stand a sustained rate of $2.8 \cdot 10^{13}$ protons/cycle so that the related interlocks could be set to a higher level than they were in 1994. After a setting-up of 10 days, physics with Pb-ions had started on 11 November and had proceeded steadily for 30 days interrupted by fortunately only one critical day. The efficiency had been 88% (85% with the critical day included) with a peak intensity of $3 \cdot 10^{8}$ Pb-ions at 158 GeV/nucleon. The residual fault rate had been evenly shared with the PS complex. It had been observed that the Pb-ion intensity depended on previous cycles in the PS complex, such as ISOLDE cycles in the Booster or lepton cycles in the PS. High intensity ISOLDE cycles were shown to be particularly disturbing. Altogether however the Pb-ion run went extremely well. The Committee congratulated all the teams involved for this achievement.

5. Status report on SPS experiments:

The outgoing Co-ordinator showed various preliminary physics plots that the Pb-ion experiments had already. The groups were very satisfied with the run. The Committee looked forward to hearing more about the results in the future. The EMU experiments with Pb-ions had completed their data-taking efficiently, thanks to the emulsion Co-ordinator K. Söderström from Lund who had organised the operation of the 10 experiments. All 10 were performed in a single day with a total effective beam-time of 5 hours. The Committee thanked him for his involvement.

6. Status report on LEAR:

The fault rate had been 12.8% over the year, but below 10% when neglecting the first start-up week. The number of hours scheduled for physics had steadily increased over the last years at the cost of MD time. There had been in total over the year $2.5 \cdot 10^{13}$ $\bar{p}$ used in LEAR by 11 experiments.

7. Status report on LEAR experiments:

Three experiments had taken data at 105 MeV/c under very good conditions. CRYSTAL BARREL (**PS197**) had concentrated its effort on 0-prong data in the gaseous hydrogen target, accumulating as much data as already taken in liquid H_2 target. OBELIX (**PS201**) had taken data on multiple reactions, in particular the Ax in 2-prong events. **PS207** had taken its first data; the analysis was in progress.

8. Discussion of the open session:

The discussion of proposal **P284**, following its presentation by the referees, revealed possible problems that the Committee wished to be clarified. The detector worries concern the scintillating fibre position detector and the very high efficiency needed by the gas Cherenkov counter, together with the trigger electronics. The Committee mandated the referees to pursue the discussion with the collaboration on the theoretical and experimental aspects which are both essential. The Committee took note of the preliminary results presented for BEATRICE (**WA92**), and encouraged the collaboration to complete rapidly the analysis. The report from **NA48** clarified the situation with regard to three critical points: two drift chambers will be installed and ready for the start of the 1995 run and the third one would be running in the Autumn, the LKr calorimeter hardware was on schedule to be running in Autumn 1996 and the electronics for the calorimeter front-end readout would be available in 1996 though maybe only partly. The Committee will continue monitoring the experiment. The presentation of proposal **P285** started by a status report on **PS200T**. The Committee complimented the group for the important progress it had achieved at the end of 1994, showing its ability to store some 10^6 $\bar{p}$ and cool them down to a temperature equivalent of 1 eV. As concerns their programme for 1995, the Committee considered favourably the completion of the technical improvements of the trap to extract cooled $\bar{p}$ and encouraged the definite goals in atomic physics proposed by the group such as that which could be done in collaboration with **PS194**. The Committee **recommended** this formulation of the proposal for approval to the Research Board. It asked the LEAR Co-ordinator to organise a beam-time sharing slightly more favourable than in 1994, in the vicinity of 1/3 for **P285** and 2/3 for **PS196**.

9. Reports from the referees

The collaboration which submitted proposal **P283**, a study of antihydrogen production at LEAR, had submitted a memorandum (SPSLC 95-6/M540) on the results of the tests made in 1994. The group had modified its proposal as follows: the set-up would be tuned in parasitic mode, at high $\bar{p}$ energy, and the main user time reduced to 2 days by using a target with a higher Z than originally considered. The Committee **recommended** for approval to the Research Board the modified proposal without commitments for further running.

10. Discussion on NOMAD(WA96):

On the invitation of the Committee, the spokesman and a member of the collaboration presented a report during the closed session. They showed the results of the study conducted on the drift chambers. They proposed methods to repair the old chambers and construct the new ones to solve the problems encountered. They presented a time-table to have a complete detector by the end of July 1996 which relies on an important effort from both the collaboration and CERN. The Committee accepted this line of action and recommended to the collaboration to invest a sustained effort in the quality control. The referee will closely follow the construction and report to the Committee at its coming sessions.

11. SPS schedule:

Version 2.0 of the SPS schedule was presented by the Co-ordinator with some modifications with respect to the draft version presented in the November meeting. The Committee discussed the layout for the 1996 SPS schedule and decided to **recommend** for approval to the Research Board the scheme in which the proton run is at the start of the year and the Pb-ion run is at the end. This was based on the responses to a survey of the users and on technical reasons from the machines. The question of whether to have an EMU run in 1995 and/or in 1996 was discussed. The Committee preferred not to have an EMU run in 1995, but decided to obtain status reports from the experiments before proceeding to a final recommendation.

12. Cogne meeting:

The Cogne meeting had to be postponed by one month. It will take place from 29 May till 3 June. The limiting date for the submission of documents to the convenors has been moved, accordingly, to 28 March. A letter will be circulated to the spokesmen of experiments and an announcement in the CERN bulletin will be made.

13. Documents received:

Lifetime measurements of $\pi^+\pi^-$ atoms to test low energy QCD predictions (LAPP Annecy - Bern Univ. - IAP Bucharest - CERN - JINR Dubna - LNF-INFN Frascati - KEK Tsukuba-shi - Kyoto-Sangyo Univ. - Industrille-Kyushu Univ. - NPI Moscow - Osaka City Univ. - CdF Paris - INP Orsay - LNS Saclay - Santiago de Compostela Univ.; SPSLC 95-1/P284).

Capture, electron-cooling, and compression of antiprotons in a large Penning trap and physics experiments with an ultra-low energy extracted antiproton beam (Los Alamos Nat. Lab. - Dep. of Phys. & Astr., University College London - Aarhus Univ. - CERN - INFN Genoa - Penn State Univ. - Univ. of Colorado, Boulder - NASA-AMES Research Center, Moffett Field - Univ. of Tokyo; SPSLC 95-2/P285).

Achievements from the collaboration searching for the production of antihydrogen at LEAR parasitically to PS202 runs: (IKP Forschungszentrum Jülich - GSI Darmstadt - Erlangen - Nürnberg Univ. - Genoa Univ. and INFN); SPSLC 95-6/M540.

Search for applications of accelerators in atmospheric physics (Dept. of Meteorology, Univ. Reading, Physics Dept., Univ. of Thessaloniki); SPSLC 94-34/I198.

14. Any other business:

The Committee took note of a letter of intent (SPSLC 94-34/I198).

The 23rd meeting will be held on **Tuesday 21** and **Wednesday 22 March 1995**.

The 24th meeting will be held at Cogne from **Monday 29** May to **Saturday 3 June 1995**.

D. Drijard